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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,939	12/17/2001	Prakash Kadkade	31699.0086	2933

21967 7590 04/06/2006

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EXAMINER	
WARE, DEBORAH K	

ART UNIT	PAPER NUMBER
1651	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/015,939	KADKADE, PRAKASH	
	Examiner	Art Unit	
	Deborah K. Ware	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,22,23,25,61-63 and 65-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8, 22, 23, 25, 61-63 and 65-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-8, 22-23, 25, 61-63 and 65-75 are presented for reconsideration on the merits.

Response to Amendment Papers

The amendment of January 11, 2006, has been received and entered. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. The terminal disclaimer filed therewith was approved and obvious double patenting rejection has been overcome.

Declaration filed under 37 C.F.R. 1.132

The declaration has been received and entered of record. Accordingly, the declaration is being considered by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-8, 22 and 61-63 and 65-70 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Panis et al in view of Fretz et al, EP 0 147 236, Cino et al and **newly cited** Goodrich Jr. et al (US Patent No. 5,800,978 cited on enclosed PTO-892 Form).

Claims are drawn to a method for recovering plant cells from cryopreservation comprising obtaining cryopreserved plant cells, thawing the cells, washing the cells in a medium comprising at least one cryoprotectant agent in successively reduced concentrations, and said medium also containing a stabilizer and further removing the cryoprotective agent and recovering the thawed plant cells. The plant cells can be of the genus species Taxus brevifolia or Musca or Picea or Daucus or Catharanthus. The agent can be glycerol or DMSO in a concentration of about 0.5 M to 2 M and present in a concentration of from about 5% to about 20% by weight. Thawing takes place at a rate of at least about 30 degrees Celsius to about 60 degrees Celsius per minute or can be at about 140 degrees Celsius per minute.

Panis et al teach obtaining cryopreserved plant cells, thawing the cells, and recovering the thawed plant cells, see page 337, all lines and entire document. The plant cells can be of the genus Musca or Picea or Daucus or Catharanthus, see pages 339, line 6, page 343, line 3, page 345, line 21, and page 348, lines 1-20. Also a regrowth step can be carried out by the process, see page 337, line 24. The agent can be a carbon source such as glycerol or it can be DMSO, wherein the agent is in a concentration of about 0.5 M to 2 M and present in a concentration of from about 5% to about 20% by weight, see page 340, lines 35-50. Thawing takes place at a rate of at

least about 30 degrees Celsius to about 60 degrees Celsius per minute, see page 340, line 7. MS-salts are used for recovery also, page 340, line 22. Removal of the agent by washing is disclosed at page 340, lines 7-8. Thawing can occur above 40 degrees Celsius, see page 337, line 20.

Panis et al does not disclose incubation technique in a medium containing cryoprotectant and stabilizer or use of Taxus brevifolia plant cells.

Fretz et al teach incubation after thawing for regeneration of plant cells, see page 141, lines 1-21. Fretz et al at page 142, column 1, line 36, teach plating the thawed plant cells.

EP Patent 0 147 236 teaches regeneration of plant cells in a medium containing a stabilizer, such as silver nitrate and other well known inhibitors, and carbon sources such as sugars, note pages 6-7, all lines.

Cino et al teach a medium and culture therefore, of Taxus brevifolia cells, see column 2, lines 46-47.

Goodrich Jr. et al teach washing the cells after thawing, note column 31, lines 44-46.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to provide a method for the recovery of cryopreserved plant cells as disclosed by Panis et al, using the washing technique of newly cited Goodrich Jr. et al and techniques of Fretz et al on a regeneration medium containing a stabilizer as disclosed by the EP Patent and further to select for Taxus plant cells as disclosed by Cino et al. The presence of cryoprotectants as disclosed by Panis et al in

the medium of the EP Patent would have been expected to work because these agents can be selected from sugars and the medium of the EP Patent clearly teaches the presence of sugars to provide for a successful combination of ingredients for the recovery of plant cells. It should be noted that sugars are encompassed by cryoprotectants. To reduce the amounts of the cryoprotectants in the media via washing the cells after thawing is clearly within the skill of an ordinary artisan as disclosed by Goodrich Jr. et al.

One of skill in the art would have expected successful results with the combination of stabilizer and cryoprotectant in a medium because these two ingredients are disclosed by the cited prior art combination to be useful for recovering plant cells. The process steps are disclosed by Panis et al Goodrich Jr. et al and Fretz et al obtaining cryopreserved plant cells, thawing, washing, and removal of cryoprotectant and recovering thawed plant cells. The cells are not disclosed by the art to have been genetically or phenotypically altered in any way.

Further, the thawed cells are plated on a medium as disclosed by Fretz et al, see page 142, line 36. In addition, the cells can be pretreated. Further to select for a heating temperature of about 140 degrees Celsius is well within the skill of an artisan who is capable of ascertaining such optimal conditions. Also Panis et al clearly teach thawing temperatures of 40 degrees Celsius and above, see page 337, all lines. Successful results would have been expected based upon the reading of the combination of cited prior art. In the absence of convincing and persuasive evidence to the contrary the claims are deemed prima facie obvious.

Response to Arguments

Applicant's arguments filed January 11, 2006, have been fully considered but they are not persuasive. The argument that a prima facie case has not been established since three basic criteria have not been met, is noted; however, there is clear suggestion in the cited prior art that each of the claimed steps are at least suggested. Note that Panis et al teach that post-thaw washing of plant cells can be judiciously performed and that such technique removes any cryoprotectant that is present in the medium. Note page 340, lines 5-8. Therefore, there is a reasonable expectation of success for carrying out these process steps on plant cells. Each of the claimed limitations have been addressed by the cited prior art combination and Applicants have not pointed to any particular claim feature which is not disclosed. Panis et al clearly teach obtaining cryopreserved plant cells, thawing the plant cells, washing the thawed plant cells and removing cryoprotectant. The thawing step is carried out by heating the cells in a water bath of 40 degrees celsius which is a temperature above which the cells are not frozen, note page 340, lines 5-6. Furthermore, Panis et al clearly suggest, if not teach, their method to be carried out in a medium having successively reduced concentrations of at least one cryoprotective agent since at page 341, noting figure 1, and at line 6, survival of thawed cells is maximized when cryoprotectant concentration is reduced.

Furthermore, the arguments and declaration are directed to Goodrich, Jr. et al of which is a secondary reference applied against the claims to show that cryopreserved cells which are typified by poor viability (i.e. blood cells) respond favorably upon thawing

when being subjected to post thaw washing. The prima facie case of obviousness is not based on Goodrich, Jr. et al alone and further this reference is not the primary reference applied against the claims. Thus, the argument that Goodrich, Jr. et al can not be modified or combined with Panis and other cited references is not convincing since one of skill in the art aware of the known difficulty of cryopreserving plant cells would have been motivated by Goodrich, Jr. et al to carry out post-thaw washing as it is a disclosed step clearly taught by Panis to be used when specified. Goodrich, Jr. et al would have clearly specified post-thaw washing as being a useful step.

Therefore, the argument that cells containing plant cell walls and those animal cells which do not contain cell walls would have been reasonably expected to perform differently with cryopreservation techniques is only persuasive in terms of the differences in the cell types being cryopreserved but the end result is an expected successful result which meets the third basic criterion of the establishment of a prima facie case of obviousness. Post-thaw washing is taught to be successful on both cell types in both of the cited references of those at least discussed above.

Thus, based upon the teaching in the primary reference, Panis, the cryopreservation techniques are predictable on plant cells because Panis is directed to cryopreserving plant cells. While the whole teaching of Goodrich, Jr. et al is directed to cells other than plant cells it is clear that some of the similar techniques disclosed by Goodrich, Jr. would have been predicted to be successful for use in Panis because the primary reference teachings the same.

Goodrich, Jr. et al clearly teach that some cells are difficult to cryopreserve and that post-thaw washing is effective. Post-thaw washing is clearly taught by Panis as well. The declaration does not mention the primary reference, wherein the same techniques are disclosed nor does it discuss the difficulty of cryopreserving blood cells and plant cells but only discusses the differences in the cells types and that the same technqiues can not be expected or predicted to work. However, Panis clearly teaches similar techniques and thus, that successful results are obtained.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Thus, the rejection is sustained because one of ordinary skill in the art would have been motivated by the cited prior art to carry out the method steps for cryopreservation as claimed herein.

Claims 23, 25 and 71-75 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Panis et al in view of newly cited Goodrich Jr. et al (discussed above), Fretz et al, and EP 0 147 236.

In addition to the descriptions discussed above, the claims are additionally drawn to a medium having a divalent cation such as calcium, magnesium or manganese, and

ethylene inhibitor such as silver salt or some other well known one can be used for recovering the plant cells. Further, a sucrose agent can be applied as a cryoprotectant agent.

Panis et al teach obtaining cryopreserved plant cells, thawing the cells, and recovering the thawed plant cells, see page 337, all lines and entire document. The plant cells can be of the genus Musca or Picea or Daucus or Catharanthus, see pages 339, line 6, page 343, line 3, page 345, line 21, and page 348, lines 1-20. Also a regrowth step can be carried out by the process, see page 337, line 24. The agent can be a carbon source such as glycerol or it can be DMSO, wherein the agent is in a concentration of about 0.5 M to 2 M and present in a concentration of from about 5% to about 20% by weight, see page 340, lines 35-50. Thawing takes place at a rate of at least about 30 degrees Celsius to about 60 degrees Celsius per minute, see page 340, line 7. MS-salts are used for recovery also, page 340, line 22. Removal of the agent by washing is disclosed at page 340, lines 7-8. Thawing can occur above 40 degrees Celsius, see page 337, line 20. Sucrose is disclosed at page 340, last line. Further, DMSO is taught to play a role as a free radical scavenger, note page 345, lines 19-20.

Panis et al does not disclose incubation in a medium having at least one ethylene inhibitor and/or divalent cation.

Goodrich Jr. et al teach washing after thawing the cells, as discussed above.

Fretz et al teach incubation after thawing for regeneration of plant cells, see page 141, lines 1-21. Also Fretz et al teach plating after thawing plant cells, note page 142, column 1, line 36.

EP Patent 0 147 236 teaches regeneration of plant cells in a medium containing a silver salt, such as silver nitrate and other well known inhibitors, and carbon sources such as sugars, note pages 6-7, all lines. Further, divalent cations are disclosed, see page 6, lines 28, 29 and page 7, line 6.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to provide for a method of recovering cryopreserved plant cells as disclosed by Panis et al using different cryoprotective agents and an additional step of washing thawed plant cells, as disclosed by Goodrich Jr. et al, with the agents in a medium containing at least one silver salt, such as silver nitrate and other well known inhibitors in the art, and divalent cations as disclosed by Fretz et al and EP Patent 0 147 236, as well as plating the thawed plant cells, also disclosed by Fretz et al. Clearly one of skill in the art would have been motivated to combine these well known steps and ingredients in the art for the purpose of recovering plant cells. There is no unexpected successful result obtained by the claimed process of which each step of said process is disclosed by the cited prior art combination. Further, the removal of more than on cryoprotectant would have been expected to work via washing as well and several washings are disclosed to be useful by Goodrich et al. Therefore, in the absence of convincing and persuasive evidence to the contrary the claims are rendered prima facie obvious over the cited prior art.

Response to Arguments

Applicant's arguments filed January 11, 2006, have been fully considered but they are not persuasive. The argument that a prima facie case has not been established since

three basic criteria have not been met, is noted; however, there is clear suggestion in the cited prior art that each of the claimed steps are at least suggested. Note that Panis et al teach that post-thaw washing of plant cells can be judiciously performed and that such technique removes any cryoprotectant that is present in the medium. Note page 340, lines 5-8. Therefore, there is a reasonable expectation of success for carrying out these process steps on plant cells. Each of the claimed limitations have been addressed by the cited prior art combination and Applicants have not pointed to any particular claim feature which is not disclosed.

Panis et al clearly teach obtaining cryopreserved plant cells, thawing the plant cells, washing the thawed plant cells and removing cryoprotectant. The thawing step is carried out by heating the cells in a water bath of 40 degrees celsius which is a temperature above which the cells are not frozen, note page 340, lines 5-6. Therefore, one of skill would have been motivated. Furthermore, Panis et al clearly suggest, if not teach, their method to be carried out in a medium having successively reduced concentrations of at least one cryoprotective agent since at page 341, noting figure 1, and at line 6, survival of thawed cells is maximized when cryoprotectant concentration is reduced.

Furthermore, the arguments and declaration are directed to Goodrich, Jr. et al of which is a secondary reference applied against the claims to show that cryopreserved cells which are typified by poor viability (i.e. blood cells) respond favorably upon thawing when being subjected to post thaw washing. The prima facie case of obviousness is not based on Goodrich, Jr. et al alone and further this reference is not the primary

reference applied against the claims. Thus, the argument that Goodrich, Jr. et al can not be modified or combined with Panis and other cited references is not convincing since one of skill in the art aware of the known difficulty of cryopreserving plant cells would have been motivated by Goodrich, Jr. et al to carry out post-thaw washing as it is a disclosed step clearly taught by Panis to be used when specified. Goodrich, Jr. et al would have clearly specified post-thaw washing as being a useful step.

Therefore, the argument that cells containing plant cell walls and those animal cells which do not contain cell walls would have been reasonably expected to perform differently with cryopreservation techniques is only persuasive in terms of the differences in the cell types being cryopreserved but the end result is an expected successful result which meets the third basic criterion of the establishment of a prima facie case of obviousness. Post-thaw washing is taught to be successful on both cell types in both of the cited references of those at least discussed above.

Thus, based upon the teaching in the primary reference, Panis, the cryopreservation techniques are predictable on plant cells because Panis is directed to cryopreserving plant cells. While the whole teaching of Goodrich, Jr. et al is directed to cells other than plant cells it is clear that some of the similar techniques disclosed by Goodrich, Jr. would have been predicted to be successful for use in Panis because the primary reference teachings the same.

Goodrich, Jr. et al clearly teach that some cells are difficult to cryopreserve and that post-thaw washing is effective. Post-thaw washing is clearly taught by Panis as well. The declaration does not mention the primary reference, wherein the same

techniques are disclosed nor does it discuss the difficulty of cryopreserving blood cells and plant cells but only discusses the differences in the cells types and that the same technqiues can not be expected or predicted to work. However, Panis clearly teaches similar techniques and thus, that successful results are obtained.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Thus, the rejection is sustained because one of ordinary skill in the art would have been motivated by the teachings of the cited prior art.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah K. Ware whose telephone number is 571-272-0924. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Deborah K. Ware
April 1, 2006

DAVID M. NAFF
PRIMARY EXAMINER
ART UNIT 1651